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| 10/585,500 | 02/17/2009 | Kyung-Soo Jin | NEURP001 | 7672 |

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VAN PELT, YI & JAMES LLP
10050 N. FOOTHILL BLVD #200
CUPERTINO, CA 95014

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| EXAMINER |
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ANTISKAY, BRIAN MICHAEL

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| ART UNIT | PAPER NUMBER |
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3739

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| NOTIFICATION DATE | DELIVERY MODE |
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10/26/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptocorrespondence@ip-patent.com

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/585,500 | Applicant(s) JIN ET AL. | |
| | Examiner BRIAN M. ANTISKAY | Art Unit 3739 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/11/2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-9 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-9 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 11 October 2011 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Amendment

Objections to the drawings have been withdrawn, 112 rejections have also been withdrawn in light of Applicant's changes, and the traversal is noted. Claims 1-9 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silny et al. DE 3025955 (hereinafter Silny) in view of Ober US Patent 4,535,779 (hereinafter Ober).

Regarding claim 1, Silny discloses an active dry sensor module (Figure 1) comprising a main body having an upper surface with insertion holes formed through the upper surface (Figure 1 and element 1) and an upper fringe protruded from the

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upper surface (element 7 with element 2); a cap (element 7), interlocked with the insertion hole (Figure 1 element 7); an active electrode inserted into the cap so that the active electrode is slidable relative to the cap (elements 1), the active electrode having a contactable upper surface and a resilient member with a first end contacting the lower part of the active electrode (Figure 1 element 3) installed in the main body and electrically connected to the main body (elements 3, 4 and 8 and machine translation page 1 lines 16-17); and an amplification circuit (element 5), installed in the main body and coupled to a second end of the resilient member (Figure 1), that is capable of receiving and processing a biomedical signal passed through the resilient member from the active electrode. Silny also teaches an active electrode having the contactable upper surface being slidable relative to the cap for directly contacting a portion of a scalp of a user that is using the active dry sensor module (elements 1 and 7).

Silny is silent on the main body being specifically hollow and is also silent on a latching protrusion protruded from a lower part of the active electrode that is capable of being latched onto a lower end of the cap.

Ober teaches a transcutaneous electrode which is placed in contact with the skin for obtaining electrical biosignals and includes a main hollow body (Figure 4 element 54) with a single uniform central internal cross section (Figure 4 element 54), which has a latching protrusion being protruded from a lower part of the active electrode (Figure 4 the base portion of element 58, which houses the active electrode); additionally teaching a cap which is interlocked with the insertion hole (upper portion of 44).

It would have been obvious to the skilled artisan at the time of invention to combine the active electrode features of Ober, as described above, with the dry electrode sensor features of Silny in order to create an electrode that includes only a single uniformly central hollow cavity to allow for one single active electrode with an increased surface area, and a latching portion which can act as a mechanical stopper or failsafe from over-extending the active electrode towards the patient.

Regarding claim 2, Silny discloses an active dry sensor module wherein a holder (Figure 1 element 6) is fixedly inserted into an insertion wherein the cap is inserted into the holder. Silny teaches an element which serves the same purpose as the holder described in the application.

Regarding claim 8, Silny discloses an active dry sensor module wherein the resilient member further comprises a spring (Figure 1 element 3). Ober additionally teaches the resilient member to be a spring (Figure 4 element 50).

Regarding claim 9, Silny discloses an active dry sensor module wherein the resilient member biases the active electrode against a surface of a user that is using the active dry sensor module (Figure 1 element 3). Ober additionally teaches that the resilient member biases the active electrode against the surface of the user (Figure 4 element 50).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Smith et al. US Patent 4,202,354 (hereinafter Smith).

Regarding claim 4, Silny as modified by Ober discloses an active dry sensor module with an amplification circuit as mentioned above but is silent on the specifics of the amplifier. Smith teaches the use of an instrumentation amplifier for amplifying the biomedical signal (column 1 lines 7-15) and adjusting a common mode rejection ratio (abstract) and a pass band to generate an output signal (column 1 lines 21-27); a band-pass filter for filtering the output signal (column 1 lines 21-27); and a notch filter for eliminating a noise component contained in the output signal (column 7 lines 62-68). It would have been obvious to the skilled artisan at the time of invention to incorporate an instrumentation amplifier with a notch and band-pass filter with the active dry sensor module which has an amplifier in order to properly filter out any undesirable signals such as muscle artifacts, tremors of other galvanic current.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Funderburk et al. US Publication 2008/0004512 (hereinafter Funderburk).

Regarding claim 5, Silny as modified by Ober discloses an active dry sensor module wherein the active electrode is plated with silver (machine translated document page 1 lines 15-16) but is silent on the spring being plated with gold or silver. Funderburk discloses a sensor inserter assembly which monitors various physiological signals and utilizes gold plated springs ([0118]) designed to bias the electrode towards the skin of the patient. The springs are not solely gold plated but a gold plated beryllium copper which is well known to have higher conductivity than just gold and is comparable to silver. It would have been obvious to the skilled artisan at the time of invention to

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utilize gold or silver plated springs as taught by Funderburk with the dry sensor module of Silny to increase conductivity and lower resistivity in order to produce better results.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Lundback et al. US Patent 4,646,747 (hereinafter Lundback).

Regarding claim 6, Silny as modified by Ober discloses an active dry sensor module but is silent on the active electrode having a curved upper surface capable of contacting a skin surface. Lundback teaches the use of an electrode for ECG examinations designed to attach to the skin by means of a curved upper surface on the active electrode (Figures 1 and 3 elements 1). It would have been obvious to the skilled artisan at the time of invention to utilize a curved smooth surfaced contact as taught by Lundback with the electrode device of Silny in order to create good contact with the skin of the user.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Sherwin US Patent 4,709,702 (hereinafter Sherwin).

Regarding claim 3, Silny as modified by Ober discloses an active dry sensor module but is silent on there being a headset inserted between the cap and the holder. Sherwin teaches the use of an EEG cap which is placed on a human head containing electrodes that use spring force to attach to the skin and more specifically include a headset (Figure 2 and 4 element 20) which is designed to hold the electrode assembly in place during use and so that the main body can be attached and detached from the

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headset (column 4 lines 23-26 and Figure 2). It would have been obvious to the skilled artisan at the time of invention to utilize a headset as taught by Sherwin with the active dry sensor module of Silny in order to stabilize the active dry electrode during use.

Regarding claim 7, Silny as modified by Ober discloses an active dry sensor module but remains silent on the active electrode having an uneven surface capable of contacting a skin surface. Sherwin teaches the use of an uneven contacting surface (Figure 4 element 32) which is designed to penetrate past the hair and contact the skin. It would have been obvious to the skilled artisan at the time of invention to utilize an uneven contacting surface as taught by Sherwin with the active dry electrode of Silny in order to have better contact and by extension improved readings.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

The Applicant was correct in that Ober did not teach an "active dry electrode". Examiner had misspoke with regards to Silny teaching an "active dry electrode", Silny does in fact teach an "active dry electrode" since no use of gel or sponge is required to obtain readings through the patient's scalp. Again Applicant was correct in that Ober does not teach an active electrode being slidable into the cap so that the active electrode is relative to the cap", but Silny very clearly covers this deficiency as well as shown in Figure 1 of Silny. Silny also teaches the use of a slidable active electrode even if Ober does not as mentioned above in the rejected claim 1.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN M. ANTISKAY whose telephone number is (571)270-5179. The examiner can normally be reached on M - R 7:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN M ANTISKAY/
Examiner, Art Unit 3739

/Linda C Dvorak/
Supervisory Patent Examiner, Art
Unit 3739